Licensable Technologies

Air-Breathing Fuel Cell Stack

Applications:

LANL's unique, cylindrical, passive, fuel-cell design is ideal for low-voltage, low-power applications. The Air-Breather is primarily designed for powering portable electrical devices with small power needs—including flashlights, laptop computers, remote-controlled toys, and radios.

Benefits:

- Small, compact, reliable, inexpensive, silent, and relatively light
- Requires no peripheral devices
- Environmentally clean—produces no byproducts that must be disposed of, cleaned up, or stored.
- Lasts at least three times as long as conventional batteries.

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Air-breathing passive fuel cell stack

Summary:

The increasing number of portable electronic devices on the market today—from laptop computers to remote-controlled toys—is creating a demand for improved, more environmentally friendly battery technologies. Until recently, electrochemical fuel cells were too complicated and expensive to meet the need because they required cooling, humidification, and pressurization subsystems to operate. In response, LANL has developed the Air-Breather Fuel Cell Stack for Portable Power Applications. The device consists of the fuel-cell stack itself (a finned, cylindrical device somewhat larger than a D-cell battery) and a small canister (with a miniature pressure regulator) that provides hydrogen fuel. The hydrogen fuel combines with oxygen that diffuses into the stack from the surrounding air. The only products of the Air-Breather are electrical power and water, which serve to maintain the moisture necessary for the unit's performance. A rechargeable fuel canister lasts three times as long as a conventional battery.

Development Stage:

This technology is reduced to practice; however, it may require customization depending upon the specific application of interest.

Patent Status:

U.S. Patent No. 5,514,486	Annular Feed Air Breathing Fuel Cell Stack
U.S. Patent No. 5,595,834	Annular Feed Air Breathing Fuel Cell Stack

Licensing Status:

This technology is available for nonexclusive licensing.

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